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HARD CHOICES

A Report on the Increasing Gap Between America's Infrastructure Needs and Our Ability To Pay for Them

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Appendix 11. MISSOURI

A CASE STUDY

PREPARED FOR THE USE OF THE

SUBCOMMITTEE ON ECONOMIC GOALS AND INTERGOVERNMENTAL POLICY

OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

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Preface

Infrastructure problems are widespread. They do not respect regional or state boundaries. To secure a better data base concerning national and state infrastructure conditions and to develop threshold estimates of national and state infrastructure conditions, the Joint Economic Committee of the Congress requested that the University of Colorado's Graduate School of Public Affairs direct a twenty-three state infrastructure study. Simultaneously, the JEC appointed a National Infrastructure Advisory Committee to monitor study progress, review study findings and help develop policy recommendations to the Congress.

In almost all cases, the studies were prepared by principal analysts from a university or college within the state, following a design developed by the University of Colorado. Close collaboration was required and was received from the Governor's staff and relevant state agencies.

Because of fiscal constraints each participating university or college agreed to forego normal overhead and each researcher agreed to contribute considerable time to the analysis. Both are to be commended for their commitment to a unique and important national effort for the Congress of the United States.

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MISSOURI INFRASTRUCTURE NEEDS: 1982 - 2000

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I

INTRODUCTION

The state of disrepair of America's infrastructure has recently surfaced as still another public policy crisis area. Such terms such as "crumbling," "deteriorating," "unsafe," "inadequate," "dangerous," "falling down," and "collapsing," have been used to describe the Nation's streets, highways, bridges, sewer facilities, water supply systems, prisons, ports and wharves. By any standard one wishes to apply, the needs are enormous and the size of the task of rebuilding the Nation's basic public infrastructure is staggering.

The necessary rebuilding process is complicated by the fact that state and local governments have the chief responsibility for the provision of public infrastructure and its maintenance. In recent years, these sub-national governments have been squeezed by inadequate tax revenues, extremely high interest rates coupled with an economic recession, and a diminution of federal grants and aids. To place the impact of the latter change in perspective, in 1980, states and cities received only 14% of the federal budget, but with the introduction of new federalism in 1982, bore 60% of the cuts in the federal budget.[1]

In order to meet the direct expenditure requirements for education, public safety, etc., as well as social and income maintenance programs, state and local governments pared back maintenance expenditures and shelved capital investment projects. This government expenditure policy of robbing Peter to pay Paul, for lack of a better term, is mirrored in the economic data. Over the 13-year period 1967 to 1980, per capita capital outlays as a percent of per capita personal

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[1] Marshall Kaplan, "New Federalism, Taxes and Cities."

income of state and local governments fell from 3.69% to 2.98%. A similar but steeper decline was observed for Missouri state and local governments. In particular, the per capita percentage dropped from 3.33% in 1967 to 2.35% in 1980.

Purpose of the Study

The Missouri study is one of a number of state infrastructure studies undertaken to assess the magnitude of the infrastructure needs in America. It will provide first-time threshhold data and analysis concerning infrastructure needs and the ability of state-local governments to finance them. The primary purpose of this study is to provide some rough quantitative estimate of the amount of public capital expenditures required through the year 2000. Since future needs cannot rationally be evaluated without reference to the historical past, the study contains capital outlay figures for the past five years, as well as assessments of the current backlog in public investment where possible.

For purposes of this study the term infrastructure is confined to the basic capital outlays for roads, bridges, ports, airports, mass transit, wastewater treatment and water supply systems. Hence, not all public outlays which might be classified as infrastructure are included in this study. Specifically, outlays for education, health care, and correctional facilities are excluded.

The organization of the Missouri study is designed to focus attention on the level of recent spending for capital outlays and estimates of future need for the basic infrastructure categories cited previously. In this regard, Section II concentrates on per capita comparisons of state and local financial variables in both current and constant dollars for the years 1977 through 1981. Missouri's revenue and expenditure efforts are examined and compared with national

standards. Further, the organizational structure of Missouri local governments is outlined and the future growth of revenues is discussed. Section III analyzes the transportation sector of Missouri. Historical outlays, future needs, and sources of financing are discussed for highways, bridges, mass transit, ports, and airports. Section IV addresses wastewater and water supply needs. Finally, Section V summarizes the state's economic posture and the projected outlays for infrastructure. For public policy planning purposes, capital needs are defined over two time intervals -- 1982 to 1987 and 1982 to 2000.

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II

MISSOURI OVERVIEW

Missouri is often referred to as a border state. The eastern edge of the state is formed by the Mississippi River and is anchored by the 12th largest city in the country, St. Louis. With a metropolitan area population of nearly 2.4 million people, the state's largest city is a mixture of eastern architecture and southern traditions. The western edge of the state is also partly formed by a river and the state's second largest city is found there. Kansas City, Missouri, the 29th-largest city in the country, has a population of around 450,000, or about two-fifths of the population of the standard metropolitan statistical area (SMSA). Like its sister city across the state, much of its history can be traced back to the westward expansion where it served as a jumping-off place for those heading west.

Recent Economic and Demographic Changes

Growth in state personal income is used as a surrogate measure for economic growth of sub-economic regions. Adopting this convention, personal income in the State of Missouri grew at an average annual rate of 9.8% over the decade 1970 to 1980. During that same time frame, total personal income in the United States increased at an annual rate of 10.4%. Viewed slightly differently, total personal income in the State of Missouri increased 132% from 1970 to 1980, while total personal income in the nation increased 169%.

Focusing on the more recent past, the observed differential between state and U.S. personal income apparently persists. As noted in Table 1, over the five-year period 1977 through 1982, U.S. personal income grew at annual rate of 10.77%

TABLE 1

TOTAL AND PER CAPITA PERSONAL INCOME
GROWTH: 1977 - 1982
(Current Dollars)

Years	Total Personal Income: United States (Billions)	Percent Change	Missouri (Billions)	Percent Change
1977	$1,534.7		$ 31.95	
1978	1,727.0	12.53%	35.57	11.33%
1979	1,944.0	12.57	39.92	12.23
1980	2,154.0	10.81	42.85	7.34
1981	2,406.5	11.73	47.70	11.32
1982	2,559.9	6.38	50.37	5.60
Annual Rate of Growth:				
1977 - 1982		10.77%		9.53%
1978 - 1982		10.34		9.01
1979 - 1982		9.61		8.06
1980 - 1982		9.02		8.42

Years	Per Capita Personal Income: United States	Percent Change	Missouri	Percent Change	Ratio of Missouri/ U.S. Personal Income
1977	$ 6,984		$ 6,594		
1978	7,776	11.34%	7,302	10.74%	94.4%
1979	8,657	11.33	8,165	11.82	94.3
1980	9,483	9.55	8,702	6.58	91.8
1981	10,495	10.68	9,654	10.94	92.0
1982	11,056	5.35	10,175	5.40	92.0
Annual Rate of Growth:					
1977 - 1982		9.62%		9.06%	
1978 - 1982		9.20		8.65	
1979 - 1982		8.50		7.61	
1980 - 1982		7.98		8.13	

Source: Survey of Current Business, "Personal Income Adjusted Gross Income, 1977 - 1981," April 1983, p. 28-38.

compared to 9.53% for Missouri. Converting the income figures to a per capita measure reduces the percentage differential but does not alter the result. For example, on a per capita basis, the annual rate of growth of personal income for the U.S. was 9.62% and for Missouri, 9.06%. Perhaps a more telling statistic is that over the five-year period from 1977 through 1982, the ratio of Missouri income to U.S. personal income fell from 94.4% to 92.0%.

How should the various statistics on personal income be interpreted? In effect, the data show that historically, the rate of economic growth in the State of Missouri has not kept up with the overall rate of growth of the economy, and based upon figures for the last five years, the difference may be widening. The described changes are also reflected in statewide employment figures. Non-agricultural employment has shown little growth and, in fact, trended downward slightly over the period 1978 through the middle of 1983.[1] In large part, the lack of job growth can be traced to the state's industrial mix, which boasts a large number of durable good manufacturers, but few of the fast-growing, high-tech employers.

Missouri population growth, like the personal income measure, has lagged behind that of the nation. In fact, based upon the 1980 census, the state's population growth during the 70's was slightly less than one-half that of the national rate, .5% compared to 1.1%. This lower growth rate occurred despite any real difference between the state's birth rate per 1,000 population and that of the nation. Thus, the state has lost population to other parts of the country. If, as it seems reasonable to assume, many of those families and individuals leaving the

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[1] Missouri Department of Labor and Industrial Relations, Missouri Area Labor Trends, April 1983.

state were the more affluent and mobile ones, their departure also contributed to the decline in the state's personal income.

What inference can be drawn from the population and personal income changes just described? According to the National Planning Association (Table 2), personal income in 1972 dollars is projected to increase at an average annual rate of 3.53% over the period 1980 to 1985, at an annual rate of 3.42% from 1985 to 1990, and 3.37% for the decade 1990 to 2000. The percentages depicted appear consistent with the previous analysis and historical changes. It should be noted from that table that the projected annual rate of growth of employment from 1980 to 1985 is identical to the actual rate of growth from 1975 to 1980.

Local Government Organization

In 1977, there were 2,937 local governments in Missouri, which represented a 4.6% increase over the number in 1972. As shown in Table 3, the number of municipalities, townships, and school districts declined from 1972 to 1977, while the number of special districts increased sharply from 820 to 1,011 in 1977. In the most recent census year (1977), Missouri has roughly twice as many local units as the average state, either in total numbers or in terms of number of local governments per 100,000 population. Moreover, these proportions hold for nearly every type of local unit; i.e., counties, municipalities, townships, school districts, and special districts. While not depicted in the table, Missouri governments employ fewer full-time personnel and spend less money than that due their counterparts in other states. Once again, in 1977 Missouri local governments had 158,500 full-time employees, of which 56% worked for school districts, 27% for municipalities, 12% for counties, and 5% for special districts. Only one-tenth of 1% are employed by

STATE OF MISSOURI

POPULATION, EMPLOYMENT AND PERSONAL INCOME

1975 TO 2000

	1975	1977	1980	1981	1982	1983	1984	1985	1990	1995	2000
Population	4,754,840		4,917,440	4,951,124	4,985,039	5,019,187	5,053,569	5,088,210	5,291,460	5,508,030	5,688,980
Employment	2,157,450		2,460,660	2,492,649	2,525,053	2,557,879	2,591,131	2,624,610	2,834,460	2,954,330	3,020,640
Personal Income (Mil. 1972 dollars)	$ 20,648.7		$ 24,425.6	$ 25,261.0	$ 26,152.7	$ 27,075.9	$ 28,031.6	$ 29,053.1	$ 34,379.5	$ 40,900.0	$ 47,904.4

	Population	Employment	Personal Income
Annual Growth Rate: 1975 to 1980	.685%	1.30%	3.42%
Annual Growth Rate: 1980 to 1985	.685%	1.30%	3.53%
Annual Growth Rate: 1985 to 1990	.786%	1.55%	3.42%
Annual Growth Rate: 1990 to 2000	.727%	.638%	3.37%

Source: National Planning Association, Regional Economic Projections Series, U.S. Regional Projections; 1981 - 2000, May 1982, p. 54.

TABLE 2

townships. There are 329 local workers for every 10,000 residents, which compares to 355 nationally for local governments. In these terms, Missouri ranks 33rd among the fifty states.

TABLE 3

Missouri Local Governments by Type, 1972 to 1977

Local Units	1972	1977
Counties	114	114
Municipalities	894	917
Townships	343	327
School Districts	636	568
Special Districts	820	1,011
Total	2,807	2,937

Source: Volume 1, No. 1, Census of Governments, 1972 and 1977.

Missouri State and Local Governments

In 1980, Missouri ranked 44th out of 50 states in terms of per capita total state and local general revenues and expenditures, and 30th in terms of per capita personal income.[1] It is therefore not surprising that Missouri is often considered a low-tax, low-service level state. As shown in Table 4, on a per capita basis, Missouri own-source general revenues are just 72% of the national average for state and local governments. Property taxes, on the other hand, are fully one-third below the national average. General sales taxes come close to the national average, but income taxes are much lower than elsewhere, corresponding to 70% of the average.

Overall, for Missouri governments (Table 5), total own-source revenues rose a little over 33% from fiscal year 1977 to fiscal year 1981. Among the several

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[1] Survey of Current Business, July 1981 and Governmental Finances: 1980/81.

TABLE 4

MISSOURI

STATE AND LOCAL GOVERNMENT REVENUE SOURCES

PER CAPITA: 1977/78 - 1980/81

Type of Revenues	Current Dollars				Constant 1972 Dollars			
	1977/78	1978/79	1979/80	1980/81	1977/78	1978/79	1979/80	1980/81
GENERAL REVENUE: Own Source								
Missouri	$ 824	$ 931	$ 1,003	$ 1,062	$ 593	$ 625	$ 656	$ 602
All 50 states	1,130	1,218	1,321	1,470	813	818	816	833
TOTAL TAXES								
Missouri	653	726	759	790	470	488	469	448
All 50 states	888	934	987	1,079	639	627	610	611
PROPERTY TAXES								
Missouri	195	205	215	222	140	138	133	126
All 50 states	305	295	302	331	219	198	187	187
GENERAL SALES TAXES								
Missouri	178	201	209	214	128	135	129	121
All 50 states	190	212	227	246	137	142	140	139
INCOME TAXES: INDIVIDUAL AND CORPORATION								
Missouri	133	157	173	187	96	105	107	106
All 50 states	201	223	245	267	145	150	151	151
CHANGES AND MISCELLANEOUS								
Missouri	171	204	243	272	123	137	150	154
All 50 states	242	284	335	391	174	191	207	221
FEDERAL INTERGOVERNMENTAL								
Missouri	272	283	337	342	196	190	208	194
All 50 states	319	342	367	399	229	230	227	226

Source: Governmental Finances, Selected Years 1977-1982 (Table 5)

sources, the percentage rates of growth and contributions vary significantly. Property taxes, the historical mainstay of local government revenues, lagged behind all sources in growth over the five-year period, increasing just 18%. In contrast, both general sales and income taxes increased substantially rising $338.8 million and $325.8 million, respectively. This translates into an increase of 58% for income taxes and a general sales tax revenue rise of 45%. The observed increases, however, must be adjusted for the inflationary rise in prices which took place during that five-year span. After making such an adjustment, the per capita figures show that, in constant dollars, general sales taxes actually fell from 1978 ($128) to 1981 ($121) and remained flat elsewhere. Income taxes, on the other hand, in constant dollars rose slightly in Missouri, increasing from $96 to $106.

Recent Changes in State Revenue

Effective January 1, 1983, Missouri's general sales tax was raised to 4%, an increase of 1%. This change alone should substantially increase the yield of this tax source in the future. In addition, a growing number of Missouri municipalities and counties have adopted local sales taxes as a method of bolstering local revenues. In some local government jurisdictions with this change, the combination of local sales tax options and state general sales tax can reach from 6.5% to 7%. For example, in Kansas City, Missouri, the local sales tax rate is 6-1/8 percent. The composite rate consists of the state general sales tax rate of 4%, a state conservation tax of 1/8 percent, a county sales tax of 1/2 percent, a 1/2 percent sales tax to support public transportation within the SMSA, a 1/2 percent city sales tax earmarked for school district support, and finally, a 1/2 percent city sales tax earmarked for local capital improvement projects. The latter was voted into effect on August 2, 1983 and will remain in place for five years.

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REVENUE OF MISSOURI STATE AND LOCAL GOVERNMENTS BY SOURCE AND LEVEL OF GOVERNMENT: 1975 - 1981

(Millions of Dollars)

Year	Level of Government	Total General Revenue	Intergovernmental			General Own Source Revenue	Taxes					Current and Miscellaneous Charges
			Federal Government	State to Local	Local to State		Total	Property	Sales	Income	Other Taxes	
1975/76	All Missouri governments	4,459.4	1,025.8		4.6	3,433.6	2,724.4	931.1	647.3	498.1	647.9	709.2
	State governments	2,409.6	746.9			1,658.1	1,443.8	4.4	532.3	422.5	484.6	214.3
	Local governments	2,713.3	278.9	658.8		1,775.6	1,280.6	926.7	115.1	75.6	163.2	495.0
1976/77	All Missouri	4,870.2	1,166.7		3.6	3,703.5	2,923.5	927.1	728.2	581.4	686.8	780.1
	State	2,632.8	789.1			1,840.2	1,598.1	4.5	596.4	495.4	501.8	242.1
	Local	2,954.5	377.7	713.4		1,863.4	1,325.4	922.6	131.8	86.0	185.0	538.0
1977/78	All Missouri	5,329.5	1,325.1			4,004.4	3,173.9	946.1	847.7	643.4	736.7	832.4
	State	2,943.4	893.1		.4	2,050.3	1,784.4	4.6	700.9	550.6	528.3	265.9
	Local	3,166.7	432.0	780.3		1,954.1	1,389.5	941.5	146.8	92.8	206.4	566.5
1978/79	All Missouri	5,906.0	1,377.2			4,528.7	3,532.8	998.8	978.8	766.9	788.3	995.9
	State	3,292.8	944.6		.8	2,348.2	2,013.0	4.6	782.9	664.9	560.6	335.2
	Local	3,464.2	432.6	850.2		2,180.5	1,519.8	994.2	195.9	102.0	227.7	660.7
1979/80	All Missouri	6,388.1	1,655.6			4,932.5	3,734.3	1,058.1	1,024.1	849.7	802.4	1,198.3
	State	3,670.2	1,154.6		1.5	2,514.1	2,094.5	5.0	792.3	738.4	558.8	419.6
	Local	3,899.2	501.0	979.8		2,418.4	1,639.8	1,053.1	231.8	111.3	243.6	778.7
1980/81	All Missouri	6,903.7	1,680.7		(1)	5,223.1	3,883.5	1,093.1	1,054.0	920.2	816.2	1,339.6
	State	3,794.0	1,175.7	1,157.4		2,605.9	2,142.9	5.1	787.2	798.0	552.6	463.0
	Local	4,279.5	505.0			2,617.2	1,740.6	1,088.0	266.8	122.2	263.6	876.6

Source: Governmental Finances, years 1975/76 through 1980/81 (Table 5).

Despite the 1% increase in the state general sales tax, revenue forecasts for the remainder of fiscal year 1983/84 and for fiscal 1984/85 show the need for still more state revenue enhancement. Increases in corporate income tax rates, franchise tax rates and personal income tax rates were all considered by the State Legislature in a recent special session of that body.* What tax package, if any, will be recommended by the State Legislature is difficult, if not impossible, to forecast at this time. It can be stated, however, that the corporate income tax rate has remained unchanged since 1971, and the personal income tax rate has not been revised since the mid-60's.

Turning to the two non-tax revenue sources, current and miscellaneous charges, and federal intergovernmental aids, two observations are offered. First, from Table 5 it is clear that user-charges have become a popular method of raising revenues. From 1977 to 1981, receipts from charges grew 72%. Whether state and local governments can duplicate this rate of growth in the next five years, however, is open to question. There is some evidence that local governments have adjusted rates in recent years to reflect more clearly the cost of providing many of the user-type services, imposed some new ones, and increased others to the perceived maximum users will tolerate.

It is hazardous to predict what will happen to federal aids in the current political environment, but several factors appear to be at work: (1) concern about balancing the budget, (2) pressure on the federal government to spend more money elsewhere to meet primary national government needs (social security, defense, medical programs, etc.), and (3) an emphasis on new federalism; i.e., consolidation of grant programs and a shift of programs to state governments. On balance, the trend is clearly toward a leveling off of federal aids in current dollars, which translates into declining assistance in real terms.

*December 1983.

III

MISSOURI TRANSPORTATION

Highway System

In 1982, public road and street mileage in the State of Missouri totaled 118,965 miles, being the 7th-largest system in the country (see Appendix 2). Based upon the Missouri Highway and Transportation Department's system designation of roads, the state had 1,112 miles of interstate, 6,831 miles of primary road, and 24,229 miles of supplementary roads. The interstate designation refers to the national highway system designed to promote interstate commerce and provide defense access needs. As a bit of highway trivia, in 1956 Missouri became the first state in the nation to begin construction of the interstate system. Supplementary highways are often referred to as the "farm to market" road system and provide for the collection of traffic and funnel it into the primary system. The primary highway system is composed of roads that extend into each county of the state and link the state's population centers. This system also provides both interstate and intrastate travel.

Another way of classifying highway mileage which is useful in a study of this nature is by the jurisdiction or authority having major responsibility for the highway system. Taking this approach, we see in Table 6 that total disbursements by all units of government in Missouri amounted to $738 million in 1980. The latter figure covers all disbursements; i.e., capital outlays, maintenance, administration, public safety, and debt expense. Cross-matching the disbursement figures with the type of highway system yields the following: the entry entitled "State Administrative Highways" corresponds to the 32,172 miles of highways under the jurisdiction

of the Missouri Highway and Transportation Department. The title "Local Rural Roads" refers to the approximately 69,800 miles of road under the responsibility of counties, townships and special road districts in unincorporated places. "Local Municipalities" designates the approximately 16,300 miles of the city streets within the state. The last classification, "Federal Roads" and "Unclassified," are expenditures for federal roads -- i.e., mileage under federal jurisdiction.

Highway Expenditures

Comparative data on state and local government expenditures are often difficult to obtain due to the effect of intergovernmental transfers. This is particularly true in the case of highway financing because of the overlapping of federal aid activities with state and local highway activities and the effects of grant and aid programs. Table 6 avoids the problem of double accounting by focusing on disbursements by system rather than by expending agency. For example, the figure for local municipality capital outlays represents the total disbursements by municipalities in this category from all sources -- federal, state and local funds.

Concentrating on the various disbursement classifications, a number of disconcerting changes are observed over the five-year period 1976 to 1980 (the most recent years for which comparable data are available). First, capital outlays such as the cost of new construction, rehabilitation and restoration costs of roadways, and installation of traffic service facilities have remained essentially flat in current dollars from 1976 to 1980. A major casualty in this classification is the cancellation or delay of resurfacing projects. The escalating cost of asphalt plus the lack of budgetary increases resulted in a decrease in the number of miles

TABLE 6

STATE OF MISSOURI

TOTAL DISBURSEMENTS FOR HIGHWAYS (1)

ALL UNITS OF GOVERNMENT

1976 - 1980

(Thousands of Dollars)

	1976	1977	1978	1979	1980
CAPITAL OUTLAYS					
State administered highway	$ 252,661	$ 228,761	$ 282,377	$ 308,738	$ 236,763
Local rural roads	14,701	14,867	19,491	20,931	27,829
Local municipalities	29,374	31,956	38,278	39,562	51,066
Federal roads and unclassified	11,144	12,238	6,451	5,156	1,639
Total	307,880	287,822	346,597	374,387	317,297
Right-of-way only	28,613	19,767	27,884	23,128	13,312
MAINTENANCE					
State administered highway	96,139	101,400	118,200	137,431	125,196
Local and rural roads	44,522	48,485	56,540	61,254	71,275
Local municipalities	49,804	57,677	65,603	74,208	85,913
Federal roads and unclassified	806	798	902	893	955
Total	191,271	208,360	241,245	273,786	283,339
Administrative and Miscellaneous	29,150	37,725	39,166	43,417	65,491
Highway Police and Safety	29,488	32,439	38,686	42,786	49,005
Bond Interest	7,305	6,924	9,156	9,318	7,794
Bond Redemption (Par Value)	12,996	12,497	15,163	16,334	15,079
TOTAL DISBURSEMENTS	$ 578,090	$ 585,767	$ 690,015	$ 760,028	$ 738,005

(1) Disbursements are classified by system on which expended, rather than by expending agencies; e.g., capital outlay for municipal roads includes expenditures from federal, state and local funds.

Source: Highway Statistics; 1977 through 1981, Table HF-2.

of road which could be resurfaced each year. While scheduled resurfacing of roads extends a road bed's life, failure to resurface a road when it is needed shortens the road bed's life unnecessarily. Hence, short-term savings are gained at the expense of increased long-term cost.

The second largest expenditure is for maintenance expense, including such routine items as patching repairs, bridge painting, pavement markings, and snow removal. Unlike the capital outlays category, expenditures for maintenance increased 48% from 1976 to 1980. Adjusting for inflation over that period, expenditures remain almost constant. Although the data are not detailed enough to be more specific, one possible reason for the increase in maintenance expenditures is that snow removal, pavement markings, sign repair, and litter cleanup are difficult to delay or postpone.

The disbursement categories, "Administration" and "Highway Safety," while much smaller in dollar amounts, showed the largest increases between 1976 and 1980. Administration increased 125% and public safety 66%. Since the largest budgetary items in both of these categories are expenditures for personnel, the bulk of this increase represents additional personnel and/or salary and wage adjustments.

In summary, total disbursements for highways by all units of government in Missouri between 1976 and 1980 have increased 28%. In dollar terms, the largest increase was in the area of maintenance expenses. Excluding bonded indebtedness, the smallest increases in dollar terms occurred in the "Capital Outlays" category. Adjusting for inflation over the five-year period, capital outlays actually fell in constant dollars by one-fourth, and total disbursements by about 5% in constant dollars.

Total Road Receipts

Table 7 combines total receipts for roads for all governmental units in Missouri from 1976 to 1980. Excluded from the receipts are the amounts allocated for collection expenses and non-road purposes; receipts are segregated by the collecting agency. In the State of Missouri, roads are financed from six basic sources: road user taxes, tolls, appropriations from general funds, property taxes, and miscellaneous receipts.

Similar to other states, the chief source of financing roads in Missouri is from user-related taxes and fees. In 1980, the most recent year for which comparable data are available, road user tax revenue represented 72% of total receipts. Road user fees and charges in the State of Missouri are basically under the administration of the Missouri Department of Revenue. Many of the taxes and fees collected by the Missouri Department of Revenue are shared with local governments according to statutory law. The second largest source of revenues for roads comes from property taxes. In 1980 this source accounted for a little over 12% of the total, being the chief source of locally raised income used by counties and municipal governments to finance local road programs.[1]

The figures for tolls and bonds also represent receipts of local governments. The State of Missouri has not issued bonds for the construction of highways since $75 million of bonds were authorized by a constitutional amendment in November of 1928. Since retirement of the last road bond in 1957, Missouri has financed its highway programs entirely from highway-use revenues. Local governments, on the other hand, have made use of voter-approved bond issues more

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[1] None of the property tax accrues to the State Highway System.

TABLE 7

STATE OF MISSOURI

TOTAL RECEIPTS FOR ROADS

ALL UNITS OF GOVERNMENT

1976 - 1980

(Thousands of Dollars)

	1976	1977	1978	1979	1980
ROAD-USER TAX REVENUE (1)					
Federal agencies	$ 147,976	$ 134,805	$ 147,504	$ 215,376	$ 211,707
State agencies (2)	280,924	296,258	305,821	300,876	288,531
Municipalities	7,723	8,162	7,630	7,004	6,572
Total	436,623	439,225	460,955	523,256	506,810
Tolls	1,450	1,489	1,484	1,500	1,352
Appropriations from General Funds	39,458	55,208	71,190	92,208	46,452
Property Taxes	66,585	32,699	83,865	82,896	85,345
Other Imposts	20,469	21,552	23,375	29,132	47,861
Miscellaneous Receipts	12,363	11,712	12,044	9,823	13,037
Bonds (Par Value)	1,059	46,308	6,938	4,923	5,067
TOTAL RECEIPTS	$ 578,007	$ 608,193	$ 659,851	$ 743,738	$ 705,924
TOTAL RECEIPTS (1972 DOLLARS)	$ 436,759	$ 434,268	$ 438,672	$ 455,108	$ 395,166

(1) Excludes amounts allocated for collections expense and non-highway purposes. Revenues are segregated by the collecting agency.

(2) The state motor fuel tax for years 1976 through 1979 was distributed 5% to counties, 15% to cities and 80% to the state. Effective January 1, 1980, the counties' share increased from 5% to 10% and the state's share decreased from 80% to 75%. The cities' share remained at 15%, but eligibility was expanded to include those with population from 101 through 200.

Source: Highway Statistics; 1977-1981, Table HF-1.

recently and more frequently than the state government. However, the major stumbling block to the wider use of this financing method is a state constitutional requirement that all general obligation bonds be approved by a two-thirds majority. In this respect, Missouri is one of only five states requiring such a large approval rate for passage.

State-Administered Revenues and Expenditure Programs

Under the State Constitution, the Missouri Highway and Transportation Department and its governing body, the Commission, are responsible for providing safe and efficient transportation systems within the state. The Commission itself is bipartisan and is composed of six members, each appointed by the governor with Senate consent for a six-year term. The Commission, in turn, appoints the chief engineer, chief counsel and secretary of the Highway and Transportation Department. The day-to-day operations of the Department are carried out by the chief engineer and chief counsel. Logically, the latter is principally concerned with legal issues.

The state's 32,172-mile highway system is the responsibility of this Department. In addition to highway maintenance, construction, and improvement, the Department also develops and improves airports, rail facilities, ports, and deals with capital and operational costs of transit systems.

In Missouri, like most states, highway revenues come from funds collected from those who use the highway system. These are commonly referred to as "user taxes." Table 8 depicts actual state-administered highway receipts for the five-year period from 1977/78 to 1981/82. Essentially, the receipts in support of highway expenditures can be grouped under four main categories:

(1) Motor fuel taxes

(2) Motor vehicle license fees

(3) Vehicle sales taxes and transportation sales tax

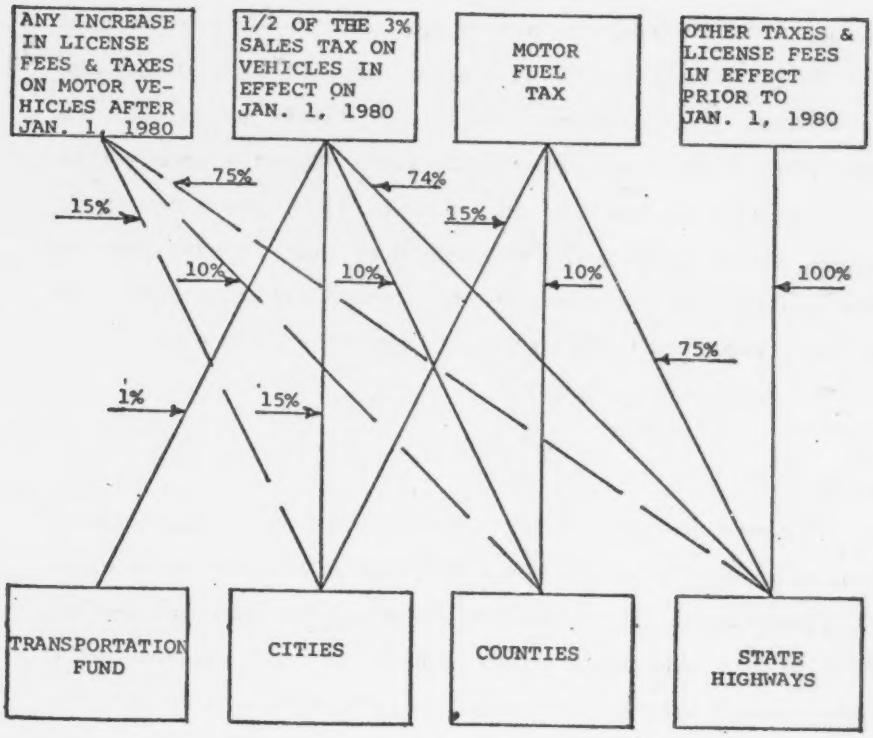
(4) Federal highway funds

The figures recorded are total receipts received by all jurisdictions and the Missouri Highway and Transportation Department from state-administered sources. Under the State Constitution of Missouri, a distributional formula is established for the allocation of certain taxes to the Missouri Highway and Transportation Department and cities and counties of the state. Diagram 1 traces out the distribution of the three shared sources -- motor fuel taxes, one-half the sales tax on motor vehicles, and increases in the level of license fees. While there are some slight variations in the distributional formulas, in essence 75% of the receipts from these sources accrued to the State Highway Department Fund, 10% to the counties, and 15% to the cities of the state.

Trends

Historically, the main source of highway revenue in the State of Missouri has been the motor fuel tax. Missouri's current rate of 7¢ was established a little over a decade ago in 1972. In November of 1982, an unsuccessful proposition was introduced on the ballot to raise the gas tax to 11¢ per gallon. Effective April 1, 1983, the federal motor fuel tax increased from 4¢ to 9¢ per gallon increasing the total tax on motor fuel in Missouri from 11¢ to 16¢ per gallon. The federal portion of this tax, along with other federal taxes, is paid into the highway trust fund and becomes a source of federal highway monies which are funneled into state and local construction and improvement projects on a matching basis. At the state

DIAGRAM 1


ANY INCREASE IN LICENSE FEES & TAXES ON MOTOR VEHICLES AFTER JAN. 1, 1980
1/2 OF THE 3% SALES TAX ON VEHICLES IN EFFECT ON JAN. 1, 1980
MOTOR FUEL TAX
OTHER TAXES & LICENSE FEES IN EFFECT PRIOR TO JAN. 1, 1980
75%
74%
15%
15%
10%
10%
10%
100%
75%
1%
15%
TRANSPORTATION FUND
CITIES
COUNTIES
STATE HIGHWAYS

level, the tax is the major source for construction and the basis for matching those same federal dollars. However, in spite of the importance of this tax, only two states of the fifty have motor fuel taxes lower than Missouri's.

Perhaps the single most important observation with respect to Table 8 is the sharp decline in receipts from this tax. In fiscal year 1977, the motor fuel tax comprised about 45% of all highway revenues. In fiscal years 1981 and 1982, the percentage had dropped to 30% and 32%, respectively. Without a doubt, the decline can be attributed to the growth of smaller and more fuel-efficient automobiles on the highways. In 1977, a passenger car owner who drove 10,000 miles a year and obtained 13.8 miles per gallon paid about $51 in Missouri fuel tax. As a result of improved fuel efficiency passenger cars, the Missouri Highway Department estimated that in 1982 that same owner obtained 16.2 miles per gallon. More importantly, driving that same 10,000 miles, the owner paid just $43 in Missouri fuel taxes. Projecting the trend through the year 1985, the Department estimates the level of fuel efficiency will reach 19.1 miles per gallon by that year, which translates into Missouri fuel tax revenues of approximately $37.[1] Looking at the issue from a different vantage point, in 1982 the motor fuel tax rate in Missouri would have had to have been increased to about 8.2¢ to offset the improved fuel efficiency which occurred between 1977 and 1982. Moreover, the motor fuel tax rate would have to rise to 9.7¢ per gallon just to offset the projected improvement in fuel efficiency by 1985.

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[1] Missouri Highway and Transportation Department, Missouri's Highways: A Pocket Primer of the Missouri State Highway System, 1983.

STATE ADMINISTERED ROAD RECEIPTS

(Millions of Dollars)

(Fiscal Years) (h)

	Actual					Projected					
	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Motor fuel taxes (a)	$ 209.95	$ 217.57	$ 203.72	$ 194.28	$ 192.84	$ 190.11	$ 182.14	$ 178.50	$ 176.75	$ 176.75	$ 176.75
Motor vehicle license (b)	99.90	103.89	105.01	104.88	107.61*						
Motor bus and truck fees (c)	1.81	2.02	2.61	2.68	3.00						
Motor vehicle use tax (d)	15.11	17.10	15.70	16.28	16.38	144.09	161.10	164.45	168.50	172.76	176.32
Drivers license fees (e)	4.68	4.46	4.46	4.86	4.56						
Motor vehicle inspection	1.88	1.91	1.91	2.01	1.92						
Vehicle sales taxes (e)	--	--	11.72	29.34	30.14	38.52	47.68	51.04	54.68	58.45	62.63
Transportation sales tax (f)	--	51.56	55.96	55.06	57.34	59.40	61.54	63.75	66.04	68.42	70.88
Interest on road fund	8.99	3.56	2.94	4.28	7.94	10.29	7.80	6.00	3.60	3.60	3.60
TOTAL REVENUES (Current dollars)	$ 342.32	$ 402.07	$ 404.03	$ 413.67	$ 421.73	$ 442.41	$ 460.26	$ 463.74	$ 469.57	$ 479.98	$ 490.18
TOTAL REVENUES (1972 dollars)	$ 235.71	$ 256.23	$ 236.23	$ 221.13	$ 209.47	$ 206.52	$ 207.80	$ 199.60	$ 192.94	$ 187.30	$ 181.68
FEDERAL HIGHWAY ADMINISTERED (g)	121.31	182.01	223.43	221.93	171.50	$ 177.9	$ 232.0	$ 244.0	$ 273.8	$ 292.0	$ 311.0
TOTAL RECEIPTS (Current dollars)	463.63	584.08	627.46	635.60	593.23	$ 620.31	$ 692.26	$ 707.74	$ 742.57	$ 771.98	$ 801.18
TOTAL RECEIPTS (1972 dollars)	319.24	373.93	366.87	339.77	294.66						

(a) Distributed as provided by Article IV, Section 30A of the Constitution -- Prior to 1980: state = 80%; municipalities of over 200 population = 15%; counties = 5%, After 1979: state = 75%; municipalities of over 100 population = 15%; counties = 10%.
(b) Fees on registration of vehicles; funds to the State Highway Department Fund.
(c) Fees for the regulation of buses and trucks paid to the State Highway Department Fund.
(d) Tax on motor vehicles purchased out-of-state or a tax on the sale of a motor vehicle between Missourians. All funds paid to the State Highway Department Fund.
(e) 50% of sales tax on the purchases of any new or used vehicles. Distributed like the motor fuel tax.
(f) A local option 1/2% sales tax; 99% of the tax distributed to district for transportation purposes.
(g) Total funds received by all local governments (state and local) from the Federal Highway Administration.
(h) Figures based on when funds were distributed to governmental units.

Sources: Missouri Highway and Transportation Department Annual Reports: 1977-1982; the Annual Reports of the Department of Revenue: 1977-1982.

*Includes disbursements to cities and counties of "increasing registration fees" on motor vehicles (House Bill 511, effective September 28, 1981).

TABLE 8

The shift towards smaller cars has also had an adverse effect on another revenue source. Within Missouri, passenger cars' license fees are determined on the horsepower rate of the engine; the higher the horsepower, the more it costs to license the car, and conversely, the smaller the engine, the lower the fee. The combined effect of generally slumping automobiles sales and a trend towards smaller cars has resulted in generally flat receipts from motor vehicle registrations.

One bright spot in the receipts category was the dedication of one-half the vehicle sales tax for roads in 1980. This has provided a new source of revenue for state and local governments, however, the slight growth which took place from fiscal 1980 to 1981, the first full two years of the tax, can be attributed to the poor market for automobile sales during that period. As the recovery from the recent deep and protracted recession continues, revenues from this source should rise.

The large revenue source entitled "Transportation Sales Tax" is a local-option, one-half percent sales tax to be used by local jurisdictions to support public or mass tran: . After the deduction of a 1% administration fee, 99% of the tax receipts are distributed directly to the local government. Currently, Kansas City, Columbia, St. Louis and several smaller cities have exercised this taxing option. St. Louis County is one of several counties which has also exercised this option. Since the tax is tied directly to the general sales tax, receipts can be expected to rise with the growth of consumption expenditures. Without this tax, public transportation in the two largest cities in the state would have failed.

Finally, over the five-year period, fiscal years 1977 to 1982, federal highway funds have fluctuated without any discernible trend. In large part, this

reflects the decline in highway trust funds available for disbursement. Passage of the Surface Transportation Assistance Act in 1982 is expected to alter the situation greatly. As the revenue effect of the increased federal motor fuel tax takes effect, the limiting factor will not be the availability of federal funds, but the ability of state and local governments to generate sufficient highway receipts to match the federal sources available.

Highway System Needs

The most comprehensive survey of highway needs in the State of Missouri is provided by the Highway Performance Monitoring System. In the program analysis, the miles of road on each of the highway systems (i.e., interstate, primary, and supplementary) are evaluated. Road standards are established with respect to five different items:

(1) Pavement condition

(2) Geometrics (steepness and/or curves)

(3) Road cross-section

(4) Operational efficiency (operating speed of vehicles)

(5) Access control

In general, the highway systems carrying the heavier volumes of traffic must meet higher standards. For example, interstate highways and expressways must meet stiffer standards than do roads classified as supplementary.

Applying the Federal Highway Administration's standards to the 35,707 miles in the Highway Performance Monitoring System (HPMS) in Missouri, 20,895 miles are found to be deficient in one or more of the five categories in 1982. This corresponds to 58% of the total HPMS miles in Missouri. According to the June

1983 issue of the Constructor, Missouri would be ranked or classified as average in terms of miles of deteriorated road compared to other states. From the detailed data on deficiency by type and system in Table 9, is it noted that the bulk of the deficiencies are on the state-supported primary and supplementary rural road systems. Total miles in this category amount to 31,969, of which 18,618 are rated deficient.

One surprising statistic from the table is that only 8.1% of the total HPMS miles are rated as deficient with respect to pavement condition.[1] But the good news does not outweigh the bad. The bulk of deficiencies within Missouri are of the type which will require extensive, if not total reconstruction of the roads. Obviously, these would be much more costly deficiencies to correct.

From data furnished by the Highway Department, the relatively low percentage of pavement which is considered in poor or very poor condition will tend to rise rather than decrease in future years. This conclusion is based upon the Department's current resurfacing program. Of the approximately 1,200 miles of completed interstate highways, approximately 500 miles will need resurfacing over the next 10 years. Presently, the Department is only resurfacing about 40 miles per year. Approximately 4,300 miles of the 6,800 of primary system roads, according to the Highway Department, will need resurfacing in the next 10 years. Currently, the Department is resurfacing just 100 miles a year, which means it will take the Department 43 years to accomplish what needs to be done in just 10 years.

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[1] As a point of clarification, it should be noted that the 8.1% refers to roads where pavement condition is the only deficiency. The Highway Department's figures show 14.9% of pavement with deficiencies, some of which have multiple deficiencies.

Finally, during the next 10 years, about 18,000 miles of the nearly 24,300 supplementary highway system miles will need resurfacing. Presently, a very minimal amount of resurfacing is being done on this system. In fact, if additional funds are not available in the very near future, portions of the system will be downgraded to the less desirable gravel surface.

Cost of Highway Backlog Improvements

The current price tag associated with the correction of the identified highway deficiencies is staggering. The total cost, as shown in Table 9, is approximately $13.4 billion in 1982 dollars. Of that total, approximately $12.8 billion would go for structural changes and improvements, and approximately $.6 billion for resurfacing. It should be emphasized that the figures just cited do not include the cost of improving and correcting deficiencies in the approximately 83,250 highway miles not included in the HPMS system. Data on the local rural and urban non-state supported system are insufficient to make a cost calculation. From the figures on the HPMS rural primary and supplementary highway miles, however, the percent deficient could be expected to be in the 50% range. Assuming that the cost of improving and reconstructing highways in this sector are just one-third of the HPMS system, this would add an additional $4.4 billion to the total cost figure.

Bridges

A decade ago, the average motorist would never have concerned himself with bridge safety. Unfortunately, today the issue is of grave concern and

STATE OF MISSOURI

NUMBER OF HIGHWAY MILES RATED DEFICIENT

AND ESTIMATED COST OF IMPROVEMENT: 1982

(Thousands of Dollars)

Highway Systems	Total Miles	Deficiency (e) Pavement	Deficiency (e) Geometric(d) and/or Other	Deficiency (e) Total	Percent Deficient Pavement	Percent Deficient Geometric and/or Other	Percent Deficiency
RURAL (a)							
Interstate and expressway	893	412	30	442	46.1%	3.3%	49.4%
Primary and supplementary	31,076	1,344	16,332	18,176	4.3	54.2	58.5
Subtotal rural	31,969	1,756	16,362	18,618	5.5	52.7	58.2
URBAN (b)							
Interstate and expressway	478	221	127	348	46.2	26.6	72.8
Primary and supplementary	3,260	908	1,021	1,929	27.9	31.3	59.2
Subtotal urban	3,738	1,129	1,148	2,277	30.2	30.7	60.9
TOTAL FOR HPMS	35,707	2,885	18,010	20,895	8.1	50.4	58.5
TOTAL COST HPMS (c) (thousands of dollars)		$ 563,990	$ 12,809,045	$ 13,373,035			
LOCAL							
Rural	73,031	N/A	N/A				
Urban	10,227	N/A	N/A				
Subtotal	83,258	N/A	N/A				
TOTAL MILEAGE - STATE	118,965	N/A	N/A				

(a) Included under the "rural" heading are all State Highway System miles plus system miles which receive Federal Highway Aid.

(b) Under the heading "urban" are all State Highway System miles plus system miles which receive Federal Highway Aid and/or dollars from state motor fuel taxes.

(c) Dollar costs are based on average cost data furnished by the Highway Department on pavement and construction costs in Missouri.

(d) Geometric and/or other deficiencies of design, grade, roadway, cross-section or access which require either total or partial reconstruction.

(e) Deficiency measure is based on U.S. Highway Administration's minimum tolerable standard. The acceptable minimum standard varies with road use and type; i.e., a higher minimum standard is applied to interstate highways than to a rural minor collection roads.

Source: Highway Performance Monitoring System, (unpublished data), 1983.

TABLE 9

justifiably so. In Missouri as in many other states, a combination of age, structural stress and neglect explain much of the deterioration.

Within the State of Missouri at the end of 1982, there were 23,833 bridges of all shapes and sizes in the state, ranging in length from simple 20-foot county culverts to immense structural steel bridges over the mighty Mississippi River. Similar to highway miles, bridges may be examined by system. The two basic systems shown in Table 10 are the federal aid system and state system. Of the 23,833 bridges in the State of Missouri, approximately 9,270 are on the state highway system, while the remaining are on city streets and county roads. Viewed from the Federal Highway Administration's perspective, about one-third are on the federal aid system.

Bridge Needs

Following guidelines developed by the Federal Highway Administration, two terms describe bridges which need either extensive rehabilitation or replacement -- "structurally deficient" and "functionally obsolete." Turning to Table 10 once again, at the end of 1982, 5,447 bridges fell into the structurally deficient category. These are the bridges which need major work on the deck or roadway, superstructure and/or sub-structure. In round numbers, about 10,500 bridges fall into the functionally obsolete category. This means that even though the bridge may be in reasonably good structural condition, it is no longer functional. Such a designation could arise because the bridge is incapable of handling increased traffic flow, the wider and heavier vehicles now on the road cannot use it, or because it has become outmoded through rapid population or industrial growth. To ensure public safety, the State Highway Department has inspected all bridges under its

STATE OF MISSOURI
ESTIMATED COST OF REHABILITATION OR REPLACEMENT
AND NUMBER OF DEFICIENT BRIDGES
DECEMBER 31, 1982
(Thousands of Dollars)

TYPE OF SYSTEM	Total Number	Structurally Deficient (a)	Functionally Obsolete (a)	Total Deficient Bridges	Percent Structurally Deficient	Percent Functionally Deficient	Percent Deficient
On-Federal-Aid System	8,650	641	2,676	3,317	7.4%	30.9%	38.3%
Off-Federal-Aid System	15,183	4,806	7,844	12,650	31.7%	51.7%	83.4%
TOTAL IN STATE	23,833	5,447	10,520	15,967	22.9%	44.1%	67.0%

TYPE OF SYSTEM (b)	Total Number	Sq. ft. of Deficient Bridges (Thousands)	Estimated Cost of Rehabilitation or Replacement (c) (Thousands 1982 Dollars)
State System (urban and rural)	9,270	17,215	$ 774,675
Cities (Off-State System)	357		
Counties (Off-State System)	14,206	13,695	410,850
TOTAL	23,833	30,910	$1,185,525

(a) Federal Highway Administration definition of structurally deficient and functionally obsolete employed in analysis.
(b) Data on number of State system bridges and number of sq. ft. of deficient bridge space furnished by the Missouri Highway and Transportation Department.
(c) Cost data calculated from the Missouri Highway and Transportation Department's average cost data for rehabilitation and replacement cost per sq. ft.

Source: Missouri Highway and Transportation Department (unpublished data), 1982.

TABLE 10

jurisdiction and posted load and/or operational controls where necessary. Currently, about 300 bridges have been posted and an additional 1,300 or so are on the farm-to-market road system and by law carry load limits.

A 1981 comparative study by the Department of Transportation indicated that over half of the substandard bridges in the United States are located in ten states. Not only is Missouri among the ten, but just three states have a larger percentage of deficient or substandard bridges. Thus, the total deficient figure of 67% recorded in Table 10 is also alarming from a comparative standpoint.

The overall poor condition of the bridges in Missouri is traceable to two basic factors. First, and perhaps most important, most of the bridges were built almost half a century ago. About one-fifth of the span-type bridges on the State Highway Department System are more than 40 years old. In most cases, these older bridges were not designed to carry the heavy loads which they are now routinely required to bear.[1] According to the Highway Department, there are about 7,250 span-type bridges on the state system. Given the age distribution of these bridges and their normal life expectancy, the Department estimates that it should be replacing an average of 145 bridges per year. Over the past few years, the number of replacements has averaged less than 30 per year, far short of the number needed. Secondly, funds allocated for normal maintenance and repairs have been cut to the bone in recent years. To illustrate, the contract major bridge

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[1] Missouri Highway and Transportation Department, Missouri's Highways: A Pocket Primer of the Missouri State Highway System, 1983.

painting program was eliminated in 1978 for budgetary reasons. Structural steel bridges span the major rivers of the state, and without proper painting areas of rust will appear, reducing the structural strength of the bridge and reducing its life expectancy. Additional evidence of this problem is illustrated in Table 10, where it is noted that bridge repairs in the last two fiscal years are but half the amount spent in the previous two fiscal years. As further illustrated in that table, construction costs for new bridges are also down substantially from previous years.

Estimating the cost of rehabilitation and replacement of the deficient bridges is carried out in two steps. First, from the bridge division of the Highway Department an estimate of the total amount of deficient square footage by bridge type was obtained. Second, the square footage was then multiplied by appropriate rehabilitation or replacement cost figures which varied by type or characteristics of the bridge. The resulting cost estimates, which are reported in Table 10, yield the total cost of bridge needs to be $1,185.5 million in 1982 dollars.

Mass Transportation

At the state level, the coordination of mass transportation funds from the federal government and basic transportation planning and assistance are provided by the Missouri Highway and Transportation Department, except for the two major transit systems in St. Louis and Kansas City. Monies to support all the agency's activities come from: (1) one percent of the revenue from the portion (1/2) of the sales tax on vehicles; (2) grants and aids from the federal government; (3) general revenue.

Urbanized public transit systems (UPTS) exist in all five of the standard metropolitan areas of the state. Ranked in terms of size, the largest is the Bi-State system of St. Louis followed by the Kansas City Area Transit Authority, Springfield, St. Joseph, and Columbia. As noted from Table 11, a variety of revenue sources are employed by the transit systems. Three of the authorities, St. Louis, Kansas City, and Columbia, received the largest portion of their revenues from local sales taxes, whereas the chief source of revenue in St. Joseph and Springfield is a utility bill surcharge and city utilities' fund payment, respectively. With the exception of Columbia and Springfield, the mass transit systems receive about 25% of their revenues from fares. Federal aids for operation and maintenance are also large. They are the second most important source of monies, and with the exception of St. Louis, exceed the amount received from fares. Capital expenditures, on the other hand, are primarily financed 80% from the federal government and 20% locally.

The annual expenditures for the five UPTS's are shown in Table 12. Overall, there has been a substantial increase in operating and maintenance expenditures over the five-year period. Primarily due to inflation induced cost increases, non-capital expenditures jumped a little over 50% in the four-year period 1978 to 1981. Faced with rising costs and limited revenues elsewhere to offset them, budgetary cuts and service reductions became necessary. From 1981 to 1982, the two largest systems in the state reduced their operations and maintenance costs by $4.27 million. As a result of the sizable decrease in these expenditures by the two major systems, overall operating and maintenance expenses fell from $118 million in 1981 to $115 million in 1982.

TABLE 11

SOURCE OF FUNDS

URBANIZED PUBLIC TRANSIT SYSTEMS

(1982 Figures)

	Operations And Maintenance	Capital
BI-STATE		
Fares	25%	
Other revenues	5	
Federal aid	20	80%
Illinois sales tax	8	1
Local sales tax	42	19
KANSAS CITY AREA TRANSIT AUTHORITY		
Fares	26%	
Other revenues	2	
Federal aid	35	78%
Local sales tax	36	22
COLUMBIA		
Fares	19%	
Other revenues	12	
Federal aid	34	80%
Local sales tax	34	20
ST. JOSEPH		
Fares	27%	
Other revenues	1	
Federal aid	36	80%
Utility bill surcharge	36	20
SPRINGFIELD		
Fares	15%	
Other revenues	0	
Federal aid	29	80%
City utilities fund	56	20

Source: Missouri Highway and Transportation Department, 1983.

Given that public transit capital outlays are 80% financed from federal sources, expenditures by mass transit systems in Missouri are very closely tied to the availability of federal aids. Over the five-year period, capital outlays fluctuate from a low of approximately $5 million in 1979 to a high of $44 million in 1982.

Protected Capital Outlays

The public transportation component of the Transportation Improvement Program (TIP) contains a listing of capital improvement projects of local public transit systems. The TIP is produced annually in compliance with regulations and guidelines issued by the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration (UMTA). The regulations require all urbanized regions of over 50,000 popuation to develop a Transportation Improvement Program (TIP) documenting all proposed transportation improvements. No projects are eligible to receive federal funding under U.S. Department of Transportation programs unless they are in the TIP. Projects in the TIP are to reflect both local and area wide priorities consistent with the goals and policies of the transportation plan. The Transportation Improvement Program represents a short or intermediate range plan for capital improvements; i.e., five years.

Projecting capital outlays for mass transit in Missouri is fraught with a number of problems. First, to the author's knowledge, to this point there has not been a coordinated effort at the state level to evaluate and plan the mass transit needs of the major metropolitan areas of the state.[1] Lacking such a plan, little

[1] Unless the state provides funding, there appears little chance such transit planning will occur.

TABLE 12

SUMMARY OF EXPENDITURES

URBANIZED PUBLIC TRANSIT SYSTEMS

(Thousands)

	Fiscal Year				
	1978	1979	1980	1981	1982
ST. LOUIS, BI-STATE					
Operations and maintenance	$55,060	$65,399	$ 80,540	$ 85,973	$ 82,067
Capital	12,721	4,300	6,993	10,562	41,348*
KANSAS CITY AREA TRANSIT AUTHORITY					
Operations and maintenance	$19,176	$21,532	$ 25,313	$ 27,935	$ 27,570
Capital	658	660	785	3,006	2,302
SPRINGFIELD					
Operations and maintenance	$ 1,204	$ 1,737	$ 1,963	$ 1,941	$ 2,181
Capital	8	4	1,324	45	428
ST. JOSEPH					
Operations and maintenance	$ 935	$ 995	$ 1,109	$ 1,250	$ 2,181
Capital				16	
COLUMBIA					
Operations and maintenance	$ 586	$ 661	$ 743	$ 907	$ 1,009
Capital	684			1,056	
TOTALS					
Operations and maintenance	$76,961	$90,324	$109,668	$118,006	$115,008
Capital	14,071	4,964	9,102	14,685	44,078

*Reflects a major garage construction program over FY 1982 and FY 1983.

Source: Missouri Highway and Transportation Department, 1983.

can be said about the projected capital improvements beyond the figures reported under TIP's. According to data furnished by the regional office of the Urban Mass Transportation Administration, projected capital improvements over the period 1983 to 1987 total to $114.5 million. Of this total, (see Table 13) nearly two-thirds represents expenditures in the St. Louis area.[2]

Second, transit capital outlays are tied very closely to the availability of federal operating assistance. Given that transit systems recover only 25% of their operating costs through fares, federal and local operating subsidies must make up the difference. The less monies available from the former, the larger the portion that must be made up by the latter, and thus, the more difficult it becomes for local governments to come up with monies to match federal assistance. Operating aid impacts the scale of service which directly affects capital needs.

Last, the two largest metropolitan areas of the state continue to push for rail transit systems, but the economic feasibility of the two systems evidently has yet to be demonstrated sufficienty to proceed beyond the research and planning stage. A decision to initiate one or both systems would have a very significant impact on capital outlays over the next 17 years. As noted in Table 13, long-term fixed capital expenditures for the proposed St. Louis and Kansas City fixed rail systems are estimated at $500 million. The magnitude of the dollars in the two proposed projects tends to dominate any projected capital cost estimate for this sector.

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[2] Data for St. Louis and Kansas City Transportation Authorities include expenditures that would also benefit the adjacent states of Illinois and Kansas, respectively.

PROJECTED MASS TRANSIT CAPITAL IMPROVEMENT PROJECTS

1983 TO 1987

(Thousands 1982 Dollars)

	1983	1984	1985	1986	1987	Totals
INTERMEDIATE RANGE						
St. Louis	$ 18,419	$ 19,791	$ --	$ 14,150	$ 21,283	$ 73,635
Kansas City	5,619	2,157	3,205	7,016	5,260	23,257
Springfield						9,126
St. Joseph						6,695
Columbia						1,785
Total						$114,498
LONG-TERM FIXED RAIL SYSTEMS						
Proposed St. Louis						$295,000
Proposed Kansas City						205,000
Total						$500,000

Sources: Regional Office of the Urban Mass Transportation Administration, (unpublished) 1983.

TABLE 13

Airports

The last comprehensive plan for airport development in Missouri was undertaken in 1974. So many changes have occurred within the state and the aviation industry since then that an updated appraisal is now necessary. To illustrate, the original plan called for a new St. Louis international airport at a cost in 1972 dollars of $243 million. Since 1974, the new facility idea for St. Louis has been abandoned in preference for expansion of the existing St. Louis Lambert Airport.

Total capital outlays for public airports from 1978 to 1982 amounted to nearly $104 million. Federal assistance represented 70% of the total, 29% came from local governments, and 1% came from the state. Although not shown in Table 14, the outlays on four airport facilities accounts for 81% of the total -- St. Louis Lambert ($60 million); St. Louis County Airport ($9.6 million); K.C. International ($12.2 million); and Springfield Municipal ($2.5 million).

Forecasts of future air passenger enplanements along with projections of certified air carrier and commuter aircraft are essential elements in assessing long-run aviation needs. Economic changes, population shifts, and deregulation have greatly altered the shape of things in recent years. Unfortunately, the data obtained for this study are incomplete, in that they only partially captures the impact of these changes on the demand for airport facilities. Updated forecasts for the state's three largest airports were obtained, but data for the remaining airports of the state had to be extrapolated from the earlier 1974 transportation plan.

Data for the three largest facilities in the state indicate total capital expenditures for the decade 1983 to 1993 will be as follows:

TABLE 14

CAPITAL OUTLAYS FOR PORTS AND AIRPORTS

CALENDAR 1978 TO 1982

(Thousands of Dollars)

Capital Outlays	Airports Actual	Ports and Waterways Actual
ANNUAL 1978		
Federal	$ 7,979	
State	295	
Local	1,617	
Total	9,891	
1979		
Federal	11,125	
State	200	$ 280
Local	3,593	
Total	14,918	
1980		
Federal	19,819	
State	200	250
Local	5,636	
Total	25,655	
1981		
Federal	24,279	
State	386	336
Local	7,065	
Total	31,730	
1982		
Federal	16,084	
State	342	464
Local	5,287	
Total	21,713	
GRAND TOTAL	$ 103,907	

Source: Missouri Highway and Transportation Department, Fiscal Year Reports 1977 through 1982.

K.C. International	$111.7 million
St. Louis Lambert	$120.0 million
Kansas City Municipal	$5.6 million
Total	$237.2 million

Adjusting the original 1974 plan for inflation and completed projects within that plan, the total unmet needs through the year 1993 are estimated to be $286.0 million. The latter figure covers all of the state's remaining 374 public and private airports within the state.

Ports

Historically, little support for capital improvements and/or operational expenses have come from the State Treasury to assist the ten port authorities along the Mississippi and Missouri Rivers. Over the five-year period 1978 to 1982, total expenditures amounted to $1.93 million. Of this amount, $960,000 came from state general revenue, $750,000 from state bonds, and $220,000 from local authorities. The state's bond share was contributed in 1982 from the proceeds of a state general obligation bond issue.

An update of the state's "Waterborne Commerce and Port Development Plan" was initiated during 1981 and completed in the latter part of 1982. The mid-America port study assessed the existing port facilities and formulated a plan for future needs and development. During the short-term, 1983 to 1987, the estimated cost of facility construction is $70 million. During the long-term period, 1987 to 2000, projected port development needs are estimated to be $287 million. An additional 23 facilities will be added during the study, bringing the total number to 33. Currently, public port site developments exist at the following locations:

Kansas City Port Authority, Howard-Cooper County Regional Port Authority, St. Louis County Port Authority, St. Louis City Port Authority, Jefferson County Port Authority, Southeast Missouri Regional Port Authority, Mississippi County Port Authority, New Madrid County Port Authority, Pemiscot County Port Authority.

It is difficult to forecast the funding for the projected $357 million development program over the period 1983 to 2000. Although the amount of funding by source cannot be determined at this time, two issues are clear. First, of the $70 million scheduled for port improvement in the short-term period, 1983 to 1987, the maximum level of support from the state would be $15.75 million. Approximately half of this amount will be provided during 1983 from a state bond issue. Second, non-federal dollars will come from a mixture of locally issued revenue bonds and state finances. The latter source, in turn, will in all likelihood come from two sources -- state general revenue bonds and legislative appropriations.

IV

WATER SUPPLY AND WASTEWATER TREATMENT

As in most states, water and sewage treatment are provided primarily by local governments and/or special districts in Missouri. According to the 1977 Census of Governments, there are 101 special water districts and four special sewer districts within the state. All four of the sewer districts and slightly less than one-third of the water districts are in SMSA's. In the case of water supply, all water systems are regulated under the guidelines of the Safe Drinking Water Act and are monitored by the Missouri Department of Natural Resources (MDNR) and local health departments. Wastewater treatment and sewage are also under the purview of the MDNR.

Typically, the two public services are financed through the sale of long-term general revenue bonds by the issuing jurisdictions. User fees are then levied on those served to cover sufficiently normal operating expenses and the amortization costs of the debt. Due to the immense capital costs of providing these two services, local jurisdictions or special districts often receive matching grant monies from the federal and/or state governments. This is more true for wastewater treatment than for provision of potable water.

Water Supply

At present, no state agency collects statewide data on water treatment, storage, and transmission and distribution facilities. While the federal safe water quality standards are being pursued from a public health standpoint, no central clearinghouse has been established to monitor the fiscal activities of the 1,000 odd

municipalities and water districts within the state. Voluminous detailed information exists on the oxygen content, bacterial level, heavy metal contents, color, etc., of the various water systems and sources; however, data on total expenditures, capital outlays and projected local capital needs are conspicuously missing.

Given this difficulty, Governmental Finances became the only alternative source of data. Table 15 reports expenditures and capital outlays of state and local governments for the fiscal years 1971/72 through 1981/82. Overall, the level of total expenditures rose from $65.9 million in 1971 to $149.1 million in 1981. The trend, however, was not continuous, as total expenditures in 1973 and 1974 dipped below the level established in 1972. In part, the absolute drop in fiscal years 1973 and 1974 may be explained by the economic recession which straddled those years.

Projected Needs

From the data contained in Table 15, an average expenditure figure (1972 dollars) for operating/maintenance and capital outlays is calculated. On a per capita basis over the period 1971 through 1981, operating/maintenance expenses reflect some slight growth in real terms and average $8.60 per capita. Capital outlays, on the other hand, for that same period are trendless and fluctuate around an average figure of $3.85 per capita.

Assuming per capita real expenditures remain trendless and equal $12.45, a projected population level in Missouri of 5,689,000 residents in the year 2000 implies real expenditures of $70.8 million. Further, expressing the figure of $70.8 million in terms of 1982 dollars yields a turn of the century figure of $146.66 million.

LOCAL GOVERNMENT WATER SYSTEMS

1972 THROUGH 1982

(Millions of Dollars)

	Total Expenditures	Per Capita 1972 $	Operations and Maintenance	Per Capita 1972 $	Capital Outlays	Per Capita 1972 $	Interest Expense	Per Capita 1972 $	Total Revenue	Per Capita 1972 $
1971/72	$ 65.9	$ 14.39	$ 32.8	$ 7.17	$ 26.2	$ 5.72	$ 6.9	$ 1.48	$ 49.0	$ 10.71
1972/73	70.5	14.37	39.5	8.05	23.9	4.87	7.2	1.45	58.8	11.98
1973/74	64.4	12.17	39.8	7.51	16.5	3.11	8.1	1.50	59.4	11.24
1974/75	68.1	11.88	44.0	7.68	15.7	2.73	8.4	1.42	62.3	10.87
1975/76	73.9	12.81	47.6	8.25	17.4	2.82	8.9	1.42	68.6	11.09
1976/77	87.1	13.26	56.0	9.42	22.4	3.40	8.7	1.33	79.7	12.14
1977/78	99.7	14.14	61.9	8.78	29.5	4.18	8.3	1.19	85.4	12.12
1978/79	111.6	14.15	76.3	9.95	27.0	3.52	8.3	1.09	94.5	12.32
1979/80	122.1	14.52	79.9	9.50	33.0	3.93	9.2	1.10	104.2	12.39
1980/81	138.4	14.95	86.6	9.35	38.3	4.14	13.5	1.47	117.9	12.72
Estimated 1981/82	149.1	14.85	95.3	9.50	40.2	4.01	--	--	129.0	12.85

Governmental Finance: 1973 through 1981, Table 21

TABLE 15

Accumulated expenditures for the entire period 1982 to 2000, during which the population is expected to grow by an annual rate of .73% per year, equal $1,533.1 million expressed in 1982 prices. The latter figure excludes interest expense from the calculation. If the ratio of operating/maintenance costs to total expenditures remains constant at the 60% level over the 18-year period, operating/maintenance costs are estimated to be $919.88 million and capital outlays $613.3 million.

The above total accumulated value of capital outlays does not include a figure for backlogged capital projects. Given the dearth of statewide data on waterworks capital needs, an estimate for improvement needs had to be calculated indirectly. Two recent capital needs surveys place the deferred capital expenditures in the U.S. between $78 billion and $125 billion. The former figure comes from a 1982 survey by the Association of Metropolitan Water Agencies and the latter is a study published by Patrick Choate and Susan Walter entitled, America in Ruins, 1981. Making the simplified assumption that Missouri's share of the nation's backlog for waterworks investment is proportional to its share of total water supply expenditures within the U.S., a rough approximation is possible. Applying Missouri's percentage to the two survey figures, postponed capital expenditures are estimated to be between $1.078 billion and $1.726 billion in Missouri. Adding the smaller of these two figures to the estimated capital outlay amount of $613.3 million yields a total capital expenditure for public waterworks between 1982 and the year 2000 of $1,691.3 million.

Sources of Funding

Public water systems in Missouri obtain their revenues from user charge fees. Turning once again to Table 15, on a per capita constant dollar basis, total

revenues have grown, for the most part, at a steady rate of approximately 2.4% per year. But, as suggested above, the calculated increases have not been sufficient to fully cover necessary required maintenance and population-induced capital outlays. Looking ahead, stemming the accumulated deterioration of the existing system cannot take place without an infusion of capital brought about through an increased level of borrowing and/or an increase in the real rate of growth of fees. From the historical record, as well as from a public finance standpoint, increased expenditures for operating and maintenance should come from higher user fees, and funding for capital expansion and waterwork improvement should come from bond financing and federal or state aid.

Wastewater Treatment

Proper treatment of wastewater is essential to protect the public from waterborne disease and to avoid the contamination of water supplies. Sewage facilities include sewer treatment plants, the system of lateral and trunk collection, and the necessary transmission and pumping stations for conveying the wastewaters. In addition, the system is often combined with storm water drainage collection to remove wastewater from streets in urban areas.

Essentially, in response to the Federal Water Pollution Control Act, the Environmental Protection Agency (EPA) initiated in 1972 a cite assessment program in every state. Data from the Missouri state survey of wastewater treatment facilities is reported in Table 16 for the six-year period 1976 through 1982. As noted in that table, starting at a relatively modest figure of $36.4 million in 1976, capital expenditures jumped more than four-fold in 1977 and remained at that level in 1978. During the next three years, the amount dropped substantially below the peak 1977 figure, but still remained at more than double the 1976 figure.

TABLE 16

MISSOURI

WASTEWATER AND WATER TREATMENT OUTLAYS: 1977 - 1982

(MILLIONS OF DOLLARS)

Outlay Category (a)	Fiscal Year 1976/77	Fiscal Year 1977/78	Fiscal Year 1978/79	Fiscal Year 1979/80	Fiscal Year 1980/81	Fiscal Year 1981/82	Total Funds 1976-82
FEDERAL PROGRAMS:							
Federal share = 75%	$ 22.8	$ 112.3	$ 103.4	$ 52.9	$ 62.7	$ 60.2	$ 414.3
State share = 15%	4.6	22.5	20.7	10.6	12.5	12.0	82.9
Local share = 10%	3.0	15.0	13.8	7.5	8.3	7.9	55.5
Subtotal Federal Programs	30.4	149.8	137.9	71.0	83.5	80.1	552.7
STATE PROGRAMS:							
State storm water grants:							
State share = 33.3%	N/A	.5	1.0	1.2	1.5	2.0	6.2
Local share = 67.79%		1.0	2.0	2.3	3.0	4.0	12.3
Subtotal	N/A	2.5	3.0	3.5	4.5	6.0	18.5
State water and sewer grants:							
State share = 50% (b)	3.0	3.5	2.9	2.7	2.5	(c)	14.6
Local share = 50%	3.0	3.5	2.9	2.7	2.5		14.6
Subtotal State Programs	6.0	7.0	5.8	5.4	5.0		29.2
TOTAL OUTLAYS:	$ 36.4	$ 159.3	$ 146.7	$ 79.9	$ 93.0	$ 86.1	$ 601.4

(a) Outlay figures represent only those programs which involve state matching funds. Excluded are programs undertaken by local governments totally from their own sources or Federal/local match programs.

(b) Includes water supply projects.

(c) No funds appropriated in 1982.

Source: Missouri Department of Natural Resources, (Unpublished Data), 1983.

Federal grants are the backbone of the capital improvement program for wastewater treatment. Of the total outlay of $159.3 million in 1977, a little over 70% came from the Federal Treasury. The reduced levels of federal support in 1979, 1980, and 1981, coupled with the poor fiscal condition of state and local governments chiefly explain the fall-off after 1978. Budgetary constraints in Missouri were so severe in 1981 that the state government did not appropriate any funds for water and sewer projects in that year.

Wastewater Needs

Employing the results of the 1982 EPA needs survey, an assessment of Missouri's wastewater treatment is summarized in Table 17. All costs are estimated in 1982 dollars and fall into two basic time frames: (1) an estimate of backlog needs which assesses the cost of providing treatment services to the 1980 population for abatement of existing pollution problems; (2) a needs assessment to the year 2000; i.e., the 1980 backlog amount plus the anticipated needs of the new growth area.

From the cost data presented, three observations are offered. First, of the basic categories listed, the last category, combined sewer overflows, is by far the most costly in terms of improvement needs. But, in terms of priorities it is perhaps the least important. Trimming this category from the list of the projects in Missouri cuts the estimated year 2000 cost of pollution abatement nearly in half from $3.082 billion to $1.783 billion.

Second, the lion's share of the state's assessed needs for the year 2000 represents backlog needs. In particular, total new assessed needs over the 18-year period from 1982 to 2000 is calculated to be $765.8 million compared to a backlog figure of $2.316 billion.

TABLE 17

EPA ASSESSMENT OF MISSOURI BACKLOG NEEDS FOR
WASTEWATER TREATMENT BY CATEGORY

(THOUSANDS 1982 DOLLARS)

Class	Category of Needs	Cost Of Backlog Needs	Assessment Of Year 2000 Needs	Difference 1982-2000 Needs	U.S. Average Backlog	U.S. Average 2000
I	Secondary treatment	$ 643,688	$ 1,082,281	$ 438,593		
II A	Advanced secondary treatment	1,963	4,274	2,311		
II B	Advanced treatment					
III A	Infiltration/inflow	37,624	37,624	--		
III B	Replacement and/or Rehabilitation	49,478	49,478	--		
IV A	New collection sewers	209,648	251,886	42,238		
IV B	New interceptor sewers	326,511	609,188	282,677		
V	Combined sewer overflows	1,047,436	1,047,436	--		
	Total (Categories I - V)	2,316,348	3,082,167	765,819		
	Total (Categories I, II, III A & B & IV B)	1,059,264	1,782,845	723,581		
	Per capita 1982 dollars (Categories I - V) (a)	465	373		387	424
	Per capita 1982 dollars (a) (Categories I, II, III A & B & IV B)	212	378		167	222

(a) 1982 population 4,985,000; 2000 population 5,689,000.

Source: EPA, 1982 Needs Survey, "Cost Estimates for Construction of Publicly-owned Wastewater Treatment Facilities" (December 31, 1982 Washington, D.C.) pages 51-57.

Third, and perhaps most important, Missouri's backlog needs and year 2000 needs are more severe than that of the average state. On a per capita basis (excluding Category V), Missouri's backlog needs are $212 compared to $167 for the U.S., and $378 versus $222 for the year 2000 needs. Put somewhat differently, Missouri's backlog needs are 27% larger than the national average, and the year 2000 needs are a whopping 70% greater than the national standard.

V

FINDINGS AND CONCLUSIONS

What can be said about the future trend of revenue sources to finance Missouri's capital outlays? The most obvious response is that developments of the recent past will continue into the future. Stated differently, revenues and expenditures will, in time, grow at the historical rates. Such an approach must be used with caution since upon reflection, it is obvious that past trends fail to anticipate known or possible structural changes, and thus can be very misleading.

A more reasonable way of approaching the issue is to ask the additional question: Which factors have the greatest impact upon state and local revenues and expenditures, and what changes are anticipated in these barometers in the near future? Broaching the subject this way, three factors are singled out for comment: (1) income and employment changes, (2) population movements, and (3) federal aids to state and local governments. Starting with the latter, the evidence clearly points to the conclusion that federal aids (direct or indirect) will not continue to grow at the 1972 to 1977 rate. The nearly doubling of aids which took place between these two census of government years was not sustained during the 1977 to 1981 period. As Table 4 depicts, from FY 1977 to FY 1981, federal aids rose by a little more than 25%. Further, given the mood of Congress and the American people to restrain government outlays and to move toward a balance federal budget, the level of funding is expected to increase only modestly after FY 1982. This, of course, means that in real terms, after inflation, the level of assistance will decline. A further complication for the state of Missouri is that federal revenue sharing dollars to the state have historically gone totally for infrastructure

projects. Phasing out of this critical source of capital funds means new sources must be developed by the state just to maintain previous levels of capital outlays.

From the 1980 census of population, several important facts stand out with respect to population movements within the state. First, three of the state's five major cities suffered population declines during the decade of the 1970's. Second, although not documented here, the greatest population growth in the state is taking place in the urban fringe areas, and in the southwestern part of the state. Oddly enough, it seems as if the imaginary line dividing the sunbelt and frostbelt regions of the country passes through the middle of Missouri. Once again, the implications of this movement for local governments is mixed. From a public finance standpoint, it suggests that the southern municipalities and counties will be confronted with an increased demand for public services and an expanded tax base from which to finance them. For the declining population areas, it means growing or continued fiscal distress as increased expenditures must be financed from a diminished population base. Faced with potential cutbacks in direct federal aids and continued rising service costs, this latter group of cities will probably come to rely more heavily upon the state for financial assistance. If the state is to respond in a meaningful way, it will in all likelihood be forced to raise additional revenues through taxation, borrowing, or reallocation of funds within the existing budget. Needless to say, the prospects for reallocations appear almost impossible, given the state's budgetary problems in fiscal 1981 and 1982.

Finally, what is revealed from recent personal income and employment information? Briefly stated, the growth of personal income and employment in Missouri has lagged that of the nation in recent years. This affects governmental finances in two ways. First, and most obviously, the lower growth rate translates

into a loss of taxable income. The loss, however, will not be evenly distributed among local government units since the state's five SMSA's account for about 78% of total state personal income. Local governments within these areas will be most directly affected by this trend, should it continue. Second, if the state is unable to edge the growth rate closer to the national average, the widening gap will also undermine the state's government ability to assist local jurisdictions.

In summary, the observed real decline in federal aids, intrastate shifts in population, and income and employment changes strongly suggest that the state of Missouri and local governments as a whole, will come under greater fiscal distress as time passes. If we add to the four factors mentioned the distorting effects of inflation on government revenues and expenditures, an even bleaker financial outlook emerges.

Capital Needs

Estimates of future capital requirements and outlays to meet them for the basic infrastructure areas are outlined in Tables 18 and 19. The former table embraces the near term five-year period 1982 through 1987, and the latter table the 18-year period 1982 to 2000. Cost estimates developed in the previous sections from planning documents and records of the various state agencies are shown in Column 1 of the tables. Backlog needs and projected outlays are depicted in Column 2 of the respective tables. Projected needs for many of the categories identified are simple extrapolations of past relationships and anticipated population growth. Thus, the estimates are subject to all the usual hazards of forecasting associated with such an approach and admittedly require a more refined methodology. Yet, despite the limitations, the results provide a reasonable indication of the magnitude of the infrastructure problem in Missouri.

ESTIMATED COST OF CAPITAL REQUIREMENTS AND OUTLAYS,
STATE OF MISSOURI, 1982 TO 1987
(Thousands of Dollars)

Infrastructure Program	Capital Outlays Necessary to Meet Estimated Needs 1982 to 1987	Estimated Capital Outlay 1982 to 1987	Capital Needs Gap
I. Missouri Highway and Transportation Department*			
Highways (a)	$ 13,373,035	$ 2,026,880	$ 15,746,155
Local streets	$ 4,400,000		
Bridges (b)	$ 1,185,500	$ 400,000	$ 785,500
Mass transit (c)	$ 114,500	$ 75,000	$ 39,500
Airports (d)	$ 237,000	$ 104,000	$ 133,000
Ports (e)	$ 85,000	$ 85,000	$ --
II. Missouri Department of Natural Resources			
Water supply (f)	$ 1,331,640	$ 253,640	$ 1,078,000
Wastewater treatment			
(i) Categories (I - V) (g)	$ 2,529,075	$ 832,678	$ 1,696,397
(ii) Categories (I - IV) ($1,260 million)			
Total for Listed Areas	$ 23,255,750	$ 3,777,198	$ 19,478,552

*Programs listed, at the state level, fall under the responsibility of the Missouri Highway and Transportation Department.

(a) "Needs" figure just covers the estimated cost of backlog. Combined highway and local street outlays are projected to remain flat at an annual level of $405 million.

(b) Bridges, similar to the highway figures, include just backlog costs. Outlays available to reduce the number of deficient structures is estimated at $50 million per year.

(c) Estimated capital outlays for mass transit are based on a projected annual level of $15 million per year.

(d) Airports outlays are extrapolated from past expenditure outlays.

(e) Ports are assumed to be funded from anticipated bond issues.

(f) Projected outlays are assumed to be sufficient to cover only necessary expansion and growth.

(g) Wastewater treatment figure includes a backlog cost plus growth amount.

Source: Various tables in the text.

TABLE 18

ESTIMATED COST OF CAPITAL REQUIREMENTS AND OUTLAYS, STATE OF MISSOURI, 1982 TO 2000

(Millions of Dollars)

Infrastructure Program	Capital Outlays Necessary to Meet Estimated Needs 1982 to 2000	Estimated Capital Outlay 1982 to 2000	Capital Needs Gap
I. Missouri Highway and Transportation Department*			
Highways (a)	$ 13,373	$ 7,290	$ 10,483
Local streets	$ 4,400		
Bridges (b)	$ 2,115	$ 1,800	$ 315
Mass transit (c)	$ 914	$ 270	$ 644
Airports (d)	$ 433	$ 360	$ 73
Ports (e)	$ 357	Unknown	Unknown
II. Missouri Department of Natural Resources			
Water supply (f)	$ 1,691	$ 613	$ 1,078
Wastewater treatment			
(i) Categories (I - V) (g)	$ 3,082	$ 1,379	$ 1,703
(ii) Categories (I - IV) ($1,219 million)			
Total for Listed Areas	$ 26,365	$ 11,712	$ 14,296

*Programs listed, at the state level, fall under the responsibility of the Missouri Highway and Transportation Department.

(a) "Needs" figure just covers the estimated cost of backlog. Combined highway and local street outlays are projected to remain flat at an annual level of $405 million.

(b) The bridge estimate corresponds to backlog costs plus anticipated replacement and repairs. Outlays available to reduce the number of deficient structures is estimated at $50 million per year.

(c) Estimated capital outlays for mass transit are based on a projected annual level of $15 million per year.

(d) Airports outlays are extrapolated from past expenditure outlays.

(e) Ports are assumed to be funded from anticipated bond issues.

(f) Projected outlays are assumed to be sufficient to cover only necessary expansion and growth.

(g) Wastewater treatment figure includes a backlog cost plus growth amount. Outlays are extrapolated from past expenditures.

Source: Various tables in the text.

Over the intermediate period 1982 through 1987, the necessary total capital outlays to meet the basic infrastructure needs of Missouri (backlog plus projected needs) is $23.256 billion. On the other hand, outlays over that same time span are estimated to be $3.777 billion. Simple arithmatic shows a capital needs gap during the intermediate period of $19.479 billion. Put another way, at the end of 1987, despite the State's $3.777 billion investment in infrastructure, Missouri's capital needs remain extremely large and are approximately six times the total five-year investment.

Turning to the longer term estimate of capital needs, total capital outlays are projected to total $26.365 billion over the eighteen-year period 1982 through 2000. Similar to the intermediate analysis, this figure encompasses an estimate of backlog costs and growth induced capital needs. Projected capital outlays, as noted in the table, are for the most part derived from the trend of recent expenditures and are estimated to total $11.712 billion. Based on this calculation, a capital needs gap of $14.296 billion is forecasted to exist at the turn of the century. Comparing the intermediate period and the year 2000 estimates, the anticipated growth of outlays are expected to further narrow the gap between necessary capital outlays (needs) and estimated outlays in the longer term, but the difference still remains large. In relative terms, the ratio of projected outlays to necessary capital outlays increases from 16% to 44%.

The foregoing figures for estimated capital outlays are very optimistic. First, for highways, the largest of the infrastructure categories, outlays are projected to reduce the current level of needs, which means annual expenditures will be large enough both to maintain the system and to reduce current deficiencies -- a very optimistic assumption in light of the recent record.

Second, it is assumed that over the intermediate period 1982 to 1987, state and local governments in Missouri will successfully issue nearly $600 million

in bonds. Under Constitutional Amendment No. 1, passed in 1982, the State is authorized to issue $600 million in bonds. According to the Amendment, the bonds are to finance infrastructure needs in three basic areas: (1) Economic development (15% of the total); (2) Repairs and maintenance of existing facilities (a minimum of 20% of the total); and (3) New construction (not to exceed 65% of the total). For the areas of economic development and new construction, specific allocative factors are delineated. As an example, of the 15% set aside for economic development, 20% is earmarked for highway transportation, 20% for transportation other than highways, 20% for water and sewer projects in Kansas City and St. Louis, 26.6% for soil conservation, and 13.4% for public sewers and water supply in rural areas. The category, new construction, is more broadly defined and includes expenditures for higher education (36.6%), correctional facilities (18.9%), public buildings (5%), etc. To date, December 1983, the legislature has authorized $100 million of the total. The remaining $500 million in bonds are anticipated to be sold over the period 1983 to 1987.

Regardless of whether the anticipated bond issues take place, in both the intermediate and long-term periods, issuance of revenue and general obligation bonds represents a viable method of raising the large sums of capital necessary to restore the state's deteriorating public infrastructure. In 1981, total long-term debt of all governmental units in Missouri amounted to 9.3¢ per dollar of personal income. For all 50 states, the figure was 14.5¢ per dollar of personal income. Thus, Missouri's long-term debt was nearly 56% less than the average for all states. In view of these statistics, it appears this funding source may be an alternative method of financing a significant portion of the required infrastructure outlays. Having said this, it is also apparent that Missourians must be convinced of the attractiveness of this approach. Given the recent track record of public bond issue elections in the State, this represents no mean task.

APPENDIX 1

GROSS NATIONAL PRODUCT IMPLICIT PRICE DEFLATOR

INDEX NUMBERS, 1972 = 100

Year	Index Measure Calendar	Fiscal Years	Fiscal Year Index	Percent Change
1976	132.34			
1977	140.05	1976/77	136.19	
1978	150.42	1977/78	145.23	
1979	163.42	1978/79	156.92	
1980	178.64	1979/80	171.03	
1981	195.51	1980/81	187.07	
1982	207.15	1981/82	201.33	
Projected (a)				
1983	1982/83	211.40		
1984	1983/84	221.97		
1985	1984/85	233.06		
1986	1985/86	244.71		
1987	1986/87	256.94		
1988	1987/88	269.79		

(a) Prices are projected at an annual rate 5%.

Source: Survey of Current Business, April 1983, p. 90.

APPENDIX 2

MISSOURI

STATEWIDE MILEAGE BY HIGHWAY SYSTEMS

Highway System	1980	1981	1982
FEDERAL AID			
Interstate total	1,102	1,112	1,112
Primary rural	6,355	6,357	6,384
Primary urban	456	500	515
Secondary	18,116	18,099	18,073
Urban	2,179	2,149	2,200
Total Federal aid	28,208	28,217	28,284
TOTAL STATE SYSTEM			
Rural	30,739	30,708	30,704
Urban	1,434	1,446	1,468
Total state system	32,173	32,154	32,172
NON-STATE SYSTEM			
Non-state rural	73,895	74,289	74,296
Non-state urban	12,168	12,299	12,497
Total non-state system	86,063	86,588	86,793
TOTAL (a)	118,236	118,742	118,965

(a) Sum of State System and Non-State System.

Source: Missouri Highway and Transportation Department, Annual Reports: 1980-1982.

APPENDIX 3

STATE OF MISSOURI

OUTLAYS FOR BRIDGES: 1974 - 1982 (1)

(Thousands of Dollars)

	For The Years			
	1974/75 1975/76	1976/77 1977/78	1978/79 1979/80	1980/81 1981/82
Number of New Structures:				
Primary and urban	138	171	113	108
Supplementary	30	52	23	9
Total length (ft.)	71,123	73,565	64,981	41,345
Total cost of contracts	$ 97,819	$ 88,620	$ 124,133	$ 76,908
Number repaired	48	110	54	38
Total cost	$ 8,110	$ 20,511	$ 24,257	$ 11,261
Federal aid off-system bridge	--	--	--	--
Replacement	--	19	7	5
Total length	--	1,542	413	726
Total cost	--	1,121	392	710
Total number new and repaired	216	352	197	160
Total length (ft.)	--	75,107	65,394	42,071
Total cost	$ 105,929	$ 110,252	$ 148,782	$ 88,879

(1) Excluded from the data are outlays of local governments on off-system bridges.

Source: Biannual Reports of the Missouri Highway Department: 30th, 31st, 32nd and 33rd Reports.

APPENDIX 4

MISSOURI

POTENTIAL FUNDING LEVELS FOR

WASTEWATER TREATMENT: 1983 - 1988

(Thousands of Dollars)

Type of Program	1983 Amounts	Total 1984-1988	Total 1983-1988
FEDERAL PROGRAMS: (a)			
Federal share	$ 67,817	$ 339,885	$ 407,702
State share	13,563	136,766	150,329
Local share	9,043	107,685	116,728
Subtotal	90,423	584,336	674,759
STATE PROGRAMS:			
State Stormwater:			
State share	2,250	15,750	18,000
Local share	4,500	31,500	36,000
	6,750	47,250	54,000
State water and sewer:			
State share	1,507	9,000	10,507
Local share	1,507	9,000	10,507
	3,014	18,000	21,014
State grant program:			
State share	5,600	28,000	33,600
Local share	4,582	22,905	27,487
	10,182	50,905	61,087
State industrial level:			
State share	2,400	9,600	12,000
Local share	1,964	7,854	9,818
	4,364	17,454	21,818
TOTALS	$ 114,733	$ 717,945	$ 832,678

(a) The Federal program for the fiscal year 1983 and 1984 is based on a 75% (Federal), 15% (State) and 10% (Local) formula. Starting with fiscal year 1985, the shares become 55% (Federal), 25% (State) and 15% (Local).

Source: Missouri Department of Natural Resources (unpublished data), 1983.

APPENDIX 5

CAPITAL OUTLAYS OF STATE AND LOCAL GOVERNMENTS FOR WATER SUPPLY AND SEWERAGE: FY 1976/77 TO FY 1980/81

	Missouri				
	FY 76/77 (Mil)	FY 77/78 (Mil)	FY 78/79 (Mil)	FY 79/80 (Mil)	FY 80/81 (Mil)
Water supply	$ 22.4	$ 29.5	$ 87.0	$ 33.0	$ 38.3
Sewerage	$ 89.8	$ 97.6	$ 27.0	$ 143.1	$ 202.2

	Per Capita Outlays for Water Supply and Sewerage				
	FY 76/77	FY 77/78	FY 78/79	FY 79/80	FY 80/81
Water Supply					
U.S.	$ 10.64	$ 9.84	$ 12.31	$ 14.76	$ 16.57
Missouri	4.65	6.09	17.80	6.71	7.74
Sewerage					
U.S.	$ 19.45	$ 20.07	$ 25.60	$ 27.76	$ 30.26
Missouri	18.62	20.13	5.52	29.10	40.84

Source: Government Finances, Years 76/77 to 80/81 - Tables 14 and 15.